WHAT IS CLAIMED IS:

1.   A method of tracking a target, comprising the steps of:

(a)   acquiring a first spectral image of a scene that includes the target;

(b)   designating a spectral reference window, in said first spectral image, that includes a respective plurality of pixel vectors;

(c)   acquiring a second spectral image, of said scene, that includes a respective plurality of pixel vectors; and

(d)   hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function, a maximum of said hypercorrelation function then corresponding to a location of the target in said scene.

2.   The method of claim 1, wherein said hypercorrelating is effected by steps including: for each said pixel vector of said second spectral image:

(i)   centering said spectral reference window on said each pixel vector of said second spectral image;

(ii)   for each said pixel vector of said spectral reference window, computing an inner product of said each pixel vector of said spectral reference window and a corresponding said pixel vector of said second spectral image; and

(iii)   summing said inner products.

3.   The method of claim 2, wherein said inner products are normalized.

4.   The method of claim 2, wherein said hypercorrelating is effected by steps further including:

(iv)   dividing said sum of said inner products by a total number of said pixel vectors of said spectral reference window, thereby providing an average of said inner products.

5.   The method of claim 2, wherein said hypercorrelating is effected by steps further including: for each said pixel vector of said second spectral image: prior to said computing of said inner products:

   (iv)   shifting said pixel vectors of said spectral reference window by a first common offset vector; and

   (v)   shifting said corresponding pixel vectors of said second spectral image by a second common offset vector.

6.   The method of claim 5, wherein said first common offset vector is an average of said pixel vectors of said first spectral image, and wherein said second common offset vector is an average of said pixel vectors of said second spectral image.

7.   The method of claim 5, wherein said first common offset vector is an average of a subset of said pixel vectors of said first spectral image, and wherein said second common offset vector is an average of a subset of said pixel vectors of said second spectral image.

8. A method of tracking a target, comprising the steps of:

(a) acquiring a first spectral image of a scene that includes the target;

(b) designating a spectral reference window in said first spectral image;

(c) acquiring a second spectral image of said scene;

(d) hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function, a maximum of said hypercorrelation function then corresponding to a location of the target in said scene;

(e) acquiring a first panchromatic image of said scene;

(f) designating a panchromatic reference window in said first panchromatic image;

(g) acquiring a second panchromatic image of said scene;

(h) correlating said panchromatic reference window with said second panchromatic image, thereby obtaining a correlation function; and

(i) combining said hypercorrelation function with said correlation function to obtain a joint correlation function, a maximum of said joint correlation function then corresponding to a location of the target in said scene.

9. The method of claim 8, wherein said joint correlation function is a pixelwise minimum of said hypercorrelation function and said correlation function.

10. The method of claim 8, wherein said acquiring of said first panchromatic image is effected substantially simultaneously with said acquiring of said first spectral image, and wherein said acquiring of said second panchromatic image is effected substantially simultaneously with said acquiring of said second spectral image.

11. The method of claim 8, wherein said acquiring of said first panchromatic image is effected by stacking said first spectral image, and wherein said acquiring of said second panchromatic image is effected by stacking said second spectral image.

12.   A method of tracking a target, comprising the steps of:

(a)   acquiring a first spectral image of a scene that includes the target;

(b)   designating a spectral reference window in said first spectral image;

(c)   acquiring a second spectral image of said scene; and

(d)   hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function, a maximum of said hypercorrelation function then corresponding to a location of the target in said scene;

wherein each said spectral image includes:

(a)   a first spectral band including only wavelengths below about 720 nanometers; and

(b)   a second spectral band including only wavelengths above about 720 nanometers.

13.   The method of claim 12, wherein said spectral images include only siad first and second spectral bands.

14.   The method of claim 12, wherein said first spectral band includes only wavelengths above about 605 nanometers, and wherein each said spectral image includes a third spectral band including only wavelengths below about 605 nanometers.

15.   The method of claim 14, wherein said spectral images include only said first, second and third spectral bands.

16.   A system for tracking a target, comprising:

(a)   a spectral imager for acquiring first and second spectral images of a scene that includes the target;

(b)   a mechanism for designating a spectral reference window, in said first spectral image, that includes a respective plurality of pixel vectors; and

(c)   a processor for hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function, a maximum whereof corresponds to a location of the target in said scene.

17.   A system for tracking a target, comprising:

(a)   a spectral imager for acquiring first and second spectral images of a scene that includes the target;

(b)   a panchromatic imaging mechanism for acquiring first and second panchromatic images of said scene;

(c)   a mechanism for designating a spectral reference window in said first spectral image;

(d)   a mechanism for designating a panchromatic reference window in said first panchromatic image; and

(e)   a processor for:

    (i)   hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function,

    (ii)   correlating said panchromatic reference window with said second panchromatic image, thereby obtaining a correlation function, and

    (iii)   combining said hypercorrelation function with said correlation function to obtain a joint correlation function, a maximum whereof corresponds to a location of the target in said scene.

18.   A system for tracking a target, comprising:

(a)   a spectral imager for acquiring first and second spectral images of a scene that includes the target, each said spectral image including:

    (i)   a first spectral band including only wavelengths below about 720 nanometers, and

    (ii)   a second spectral band including only wavelengths above about 720 nanometers;

(b)   a mechanism for designating a spectral reference window in said first spectral image; and

(c)   a processor for hypercorrelating said spectral reference window with said second spectral image, thereby obtaining a hypercorrelation function, a maximum whereof corresponds to a location of the target in said scene.